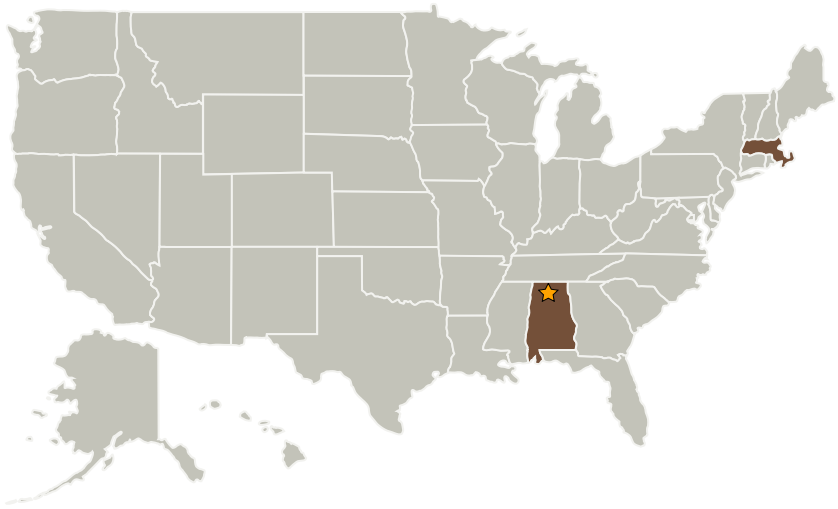
Oxidation Resistant CMC Materials Technology for Lightweight and Environmentally Durable Propulsion Components, Phase I

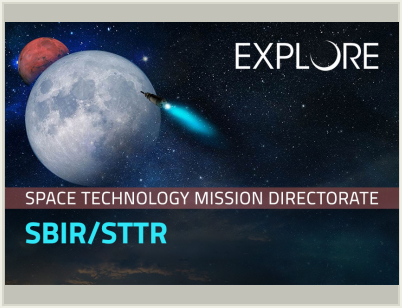
Completed Technology Project (2006 - 2006)

Project Introduction

Surmet will demonstrate a novel processing method to develop environmentally resistant C/SiC composites for turbomachinery. The need to reduce the weight, size, and costs of current systems make the use of SiC ideal in these high temperatures and extreme environments. Traditional processing of SiC materials are inherently limited in terms of component thicknesses and overall sizes that can be processed, as well as uniform densification. Also, pure SiC matrices are subject to attack in the environments expected for these components, e.g., hydrogen rich steam and oxygen rich environments. Surmet proposes a protected C/SiC composite from preceramic polymer as a solution to NASA systems' weight, environmental resistance, and cost requirements. A number of specimens will be fabricated to demonstrate mechanical strength, thermal capability, and environmental durability of these materials. The Phase II program will demonstrate repeatability in properties and produce relevant CMC components that will be tested under simulated service conditions.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Surmet Corporation	Supporting Organization	Industry	Burlington, Massachusetts

Primary U.S. Work Locations	
Alabama	Massachusetts

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.3 Thermal Protection Components and Systems
    - TX14.3.1 Thermal Protection Materials